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Just around the corner...

AERA 2010 in Denver, CO April 30-May4



## AERA Division I - Vice President's Message

Dear colleagues,

AERA 2010 in Denver is around the corner and I am delighted to inform you that once more we have an exciting program covering a variety of timely topics in the professions. Thanks to all of you who submitted very interesting research papers, and to Stan Hamstra, who created the program. As it was not enough to Chair the Program Committee, he also volunteered to organize the Division I Social. I am told that we will be treated with an excellent dinner at Tag, located in the historic Larimer Square area of Denver. Please make your reservations soon.

This year, our Graduate Student Representatives have organized a welcome reception on the first day of the conference, and together with the Mentoring Committee are launching an initiative, where graduate students and junior faculty members could receive constructive feedback from a senior scholar, both on their presentation skills and future directions for research. For more details, please read their announcement's (page 4). All those who are session chairs, please make sure that you contact the presenters of your session to upload their papers no later than **April 9**. All relevant information concerning the roles and responsibilities of chairs and discussants are available on page 6. We succeeded in keeping the Business Meeting and the Reception on the second day of the conference, and since this year we are gathering over a weekend, the Business Meeting will be on Saturday evening, May 1<sup>st</sup> at 6:15 PM at the Conference Center. The awards will be provided during that evening. The two breakfast sessions will be on Saturday and Sunday, from 7:00 – 8:00 AM in the VP Suite in Sheraton, and the

discussions will focus on strategic planning and mentoring respectively. I would strongly encourage a large number of you to attend and present your thoughts.

A new feature of this year's program includes two 90-minute invited workshops. The first one is on Saturday by Michael Kane and Susan Case on "Validity: Translating Theory into Practice," and the second one is on Sunday by Ilene Harris on "Requirements for Qualitative Research Methods." These sessions are open to all.

Finally, one of the highlights of the program is the Invited Address on Monday morning. This year we are fortunate to have Trudie Roberts, Professor and Director of Medical Education Unit at Leeds Institute, Leeds, UK. The title of her keynote address is "Scholarship, the Final Frontier: Meaning, Measuring, and Maximizing".

Please also note this issue contains the session titles and times for the Professional Licensure and Certification SIG, which many division members have found of interest over the years (page 23).

I would like to take this opportunity to thank the Division I officers and all the members of the different committees, who have helped in many different ways to make this program a success. Come and join us in Denver, and bring your friends too.

Ara Tekian



## 2010 Annual Meeting Program Chair's Report

Dear Colleagues,

I am really excited about the Program for AERA Division I this spring. We received a large number of proposals, so the task of whittling them down into a solid nucleus was a bit daunting. Certainly, it was a lot of work... as an aside, I would not recommend anyone plan to be Program Chair during the time that they move from one institution to another (in a different country). Having said that, I had a great deal of help, and I think in the end the 2010 Program is a solid one. This is entirely due to the quality of people we have in Division I – both the membership who are doing the innovative work and submitted proposals, and the leadership of our division.

This year, Division I received 8 symposium proposals and 101 individual paper submissions. We have a tradition in Division I of an extensive peer review process (i.e., each proposal is sent to 5 individuals for assessment and feedback including at least two program committee members). This is the most rigorous of all Divisions in AERA – which is good – but requires the generation, collation, and evaluation of more than 400 reviews. In addition, we continued the process started last year of having all symposia evaluated by a common group of raters. We found this approach helped to ensure reliability (and hopefully – validity!). Altogether, over 45 people provided reviews and input about the structure of the 2010 Division I program.

Each member of the Program Committee read and commented on at least 20 individual proposals. The team then gathered for a meeting in Ottawa, Ontario, for a rigorous day of discussion, selection, and organization to put together the 2010 Division I program. This team consisted of the following people, to whom I owe a great debt of gratitude: Susan Case, Kevin Eva, Sara Kim, Ara Tekian, Lara Varpio and Tim Wood. Although Christy Boscardin couldn't join us in Ottawa, we benefited greatly from her reviews and her work on the committee prior to our meeting. Behind the scenes at AERA, we also had plenty of help from Samara Wolf, Laurie Cipriano and Phoebe Stevenson. I wouldn't have been able to pull this off at all without the help of two previous Program Chairs – Kevin Eva and Susan Case. I can't say enough about their generosity in guiding me through the process. Finally, I'd also like to thank Ara Tekian for helping me out whenever I needed that extra little bit of guidance and advice based on his experience with AERA over the years. I really need to thank him for his

leadership and support because he made my job so much easier. He is truly a mensch!



The end result is that Division I includes 17 sessions that highlight the vast range of work being done in Professions Education today. Each year that focus changes slightly, and this is reflected in the submissions we receive. Like all healthy entities, we as an organization must adapt to those changes. That is why you'll notice a session for the Strategic Planning Committee (which is open only to members of the committee, but will report to Division I during the Business Meeting on Saturday evening).

There are also changes to the format of the Program. This year we have two Roundtable sessions, which have taken a new form compared to their earlier incarnation. To ensure more structure and scholarly discourse, this year the Roundtables will be somewhat more focused, with a Chair, who will be responsible for reviewing all the papers and provide a brief introduction about why they think these papers belong together. This should help to reduce the disparity of papers within a session, and facilitate discussion.

In addition, there are the traditional meeting staples which include the Business Meeting and Reception – a "must" (Saturday evening) and the Division I Social – another "must" (Sunday night). By the time you receive this newsletter those of you who are presenting should have uploaded the final copy of your paper to enable Discussants to prepare their remarks.

Finally, to help us continue to improve, please complete evaluation forms for the sessions if you are asked. It only takes a minute but helps us to make the program even better for next year.

Thanks once again to all those individuals who contributed time and effort to AERA 2010. I look forward to seeing you all in Denver - Giddyup!

Sincerely,

Stan Hamstra  
2010 Program Chair



**Please join your Division I colleagues for a social evening  
in the historic Larimer Square area of Denver.....**

**AERA Division I Social  
Sunday May 2, 2010, 6:00 p.m. at  
TAG | Continental Social Food**

1441 Larimer Square, Denver, CO 80202  
Tel: (303) 996-9985 | [www.tag-restaurant.com](http://www.tag-restaurant.com)  
We will be in the private dining room



TAG | CONTINENTAL SOCIAL FOOD

IT'S AN ADVENTURE—TO SAMPLE AND SHARE WITH YOUR FRIENDS,  
A NOVEL EXPERIENCE THAT PUSHES THE BOUNDARIES OF YOUR EXPECTATIONS.  
GO AHEAD, NO GREAT BREAKTHROUGH EVER COMES WITHOUT RISK.

**Menu:** The menu is seasonal, so we don't have details at the time of this writing, but it will consist of 4 courses – starter, salad, entrée and dessert. You can count on some interesting, tasty items, such as sushi, empanadas, edamame, seasonal fish, chicken, steak, or one of my favorites (since eating out in Montreal) – bone marrow. (One of their recipes is prepared with a kumquat reduction).

Cash bar will be open as of 5:30 p.m.

**Dinner cost:** U.S.\$ 60.00 Payment by **April 22, 2010** would be greatly appreciated

Dinner fees may be paid by **check (preferable)** or credit card.

- Check: (Enclosed) made out to AERA
- Credit Card: Visa MasterCard Expiration Date: \_\_\_\_\_

Card Number: \_\_\_\_\_

Signature: \_\_\_\_\_

Your name and that of any guests (print): \_\_\_\_\_

**Mail to:** Stanley J. Hamstra, PhD.  
Academy for Innovation in Medical Education (AIME)  
University of Ottawa, Faculty of Medicine  
451 Smyth Road, RGN 2211  
Ottawa, Ontario, K1H 8M5, Canada

**Fax/ Email:** 1-613- 562-5361; [shamstra@uottawa.ca](mailto:shamstra@uottawa.ca)



## A message from your graduate student reps



Ling Hsiao

Graduate Student  
Representatives

Christina Cestone



Dear Fellow Graduate Students,

We're excited to meet you in person in Denver and learn more about your research interests in Division I! Please join us at the *Welcome Orientation to Division I* activities and sessions on Friday, April 30th, 11:00am-12:30pm (in Hyatt Regency - Quartz Room). Come enjoy coffee and refreshments before attending your first session and meet other Division I graduate students and faculty.

If you are arriving later on Friday, we'll be at the Registration Hall in the Graduate Student Information Booth from 4:00-5:00pm. Drop by when you register and we'll be happy to share any tips and information to make your conference a memorable one! Or meet us at the *Graduate Student Orientation and Social* at the Graduate Student Resource Center (GSRC) in Convention Center Room 207 from 6:15-7:45pm.

On Saturday, our Fireside Chat session, "*Finding the Right Balance Between Research and Professional Practice: Opportunities to Expand Educational Research in the Profession*," will be lead by Dr. Stanley

J. Hamstra, Acting Assistant Dean, Academy for Innovation in Medical Education, at the University of Ottawa Faculty of Medicine. This discussion will introduce the field of professional education and the rewards and challenges of becoming a scholar in education in the professions. This interactive session will take place at the Colorado Convention Center (Room 710) on May 1st, 12:25-1:55pm.

We're also still accepting applications for a junior graduate student representative for next year. This is a wonderful opportunity to learn more about education research in the professions and interact with educational leaders in a variety of professional fields. This is a two-year position and in the second year, the senior representative is sponsored to attend the annual Combined Committee Meeting in Washington, D.C. with Division I and Graduate Student Council members on planning the AERA meeting. If you are interested, please send your C.V. with a brief statement of interest to Ling Hsiao ([ling\\_hsiao@mail.harvard.edu](mailto:ling_hsiao@mail.harvard.edu)).

## Division I Pilot Program: Peer Review and Feedback on Junior Scholar's Presentations

The Division I Mentoring Committee and the Graduate Student Representatives are thrilled to announce the launch of an exciting pilot program to give novice scholars (graduate students or junior faculty members) the opportunity to have their presentations reviewed and to receive feedback from a senior faculty at the coming AERA annual meeting. Graduate students or junior faculty members who choose to participate will be paired with a senior faculty member who will observe the presentation and offer constructive feedback on presentation style and future directions for the research project.

The main goals of this exercise are to provide fledgling scholars an opportunity to refine their scholarly presentations and to promote collegial relationships between junior and senior scholars in the division.

Graduate students, junior faculty or senior faculty who are interested in participating in this exciting pilot program in any role should **contact Maria Blanco at [maria.blanco@tufts.edu](mailto:maria.blanco@tufts.edu) or Ling Hsiao at [lih750@mail.harvard.edu](mailto:lih750@mail.harvard.edu)** .

We are looking forward to hearing from you!

Ling, Christina, Hugh, Maria

Mentoring

## Tips for Delivering an Exciting Presentation! From the Division I Mentoring Committee

Dear Division I member,

As you begin preparing for your session at the Annual Meeting, please consider the following tips to help you prepare and deliver a memorable presentation:

### Careful Preparation

- Think about a **story** that you can craft from your work. Select 3 main story- points to share with the audience that are memorable and that capture the essence of your work.
- Be creative and illustrative in your wording
- Practice, practice, practice. Time your presentation to make sure you can give the whole story without having to omit points or rush through your conclusions.
- Arrive at the room early, meet your co-presenters, moderator and discussant, and allow enough time to load your presentation on unfamiliar equipment.
- **Relax!**

### Organization

- Think about an introduction, body and conclusion for your story.
- Address your contextual/theoretical framework (introduction); research methodology and main findings (body) and conclusions in your story.

### Audiovisual Aids

- Do not have slides typed out in full sentences, just include key words or phrases and – better yet – illustrations.
- Select easy to see and pleasant colors and images. (refer to: <http://office.microsoft.com/en-us/powerpoint/HA010120721033.aspx> for ideas)
- Be gentle with animations (you do not want to distract the audience from your exciting story).
- Use **bold** or **color** font to emphasize key points rather than UPPER CASE.

### Dynamic Delivery

- Talk to the **audience**, not the screen or the monitor.
- Bring the passion and energy you feel for your work with you to proudly demonstrate to the audience.
- Avoid stereotyped movement
- Use gestures gently to emphasize key points.
- Vary your voice and pause to convey your energy and boost interest.
- Repeat any questions that have been posed to you for the audience (this will also give you time to think about how you will reply!).
- **Go for it!**

### After the presentation

- Reflect on what went well and areas to improve.
- Seek feedback from the audience.

### Another tip for new investigators and “junior” faculty members:

- Participate in the Division I Mentoring Committee’s pilot program of feedback on your presentation (look for more information in PERQ, pg. 4).

#### References:

Irby, D.(2004). Practical teaching: great presentations every time. *The Clinical Teacher* 1: 5-9.

Litin, S. (2008). Faculty Development Presentation Skills for Physicians: Making Your Next Teaching Presentation Go Better Than Your Last. Presented at American College of Physicians Internal Medicine Meeting, Washington DC, May 15-17.

## Annual Meeting Tips for Chairs and Discussants

### Chair Responsibilities

Chairs are responsible for the overall planning and execution of the session to facilitate the sessions' success. Responsibilities fall into the following three areas:

#### *In Advance of the Session*

- Ensure that all presenters upload final papers no later than April 9th. As Chair, when you login to the online program you will be able to view author's papers and email addresses for your session.
- Send an email to participants reminding them to upload their papers. This will reinforce the notification sent by AERA. For paper and roundtable sessions, the author's initial submission may serve as the final paper if a revised paper is not uploaded. For all other session types, authors must upload a paper no later than the April 9 deadline.
- Download and read the papers for your session after the April 9 deadline, in order to prepare comments and organize your thoughts.
- Contact by email any discussants to ensure they have downloaded and read the papers and begin a conversation about shaping the session.

#### *At the Session*

- Be mindful of accessibility of sessions and help AERA cultivate a universally accessible environment. As Chair of the session, attention to the recommended guidelines is greatly appreciated. For detailed information on the accessibility guidelines, please refer to [http://www.aera.net/meetings/Default.aspx?menu\\_id=22&id=490](http://www.aera.net/meetings/Default.aspx?menu_id=22&id=490).
- Open the session at the scheduled time and orient the audience to the context with a few brief introductory remarks.
- Make an announcement at the beginning and end of the session noting that, as part of the changes to enhance the quality of the meeting, attendees are asked to complete an evaluation form for a random sampling of sessions, should your session be chosen for inclusion. Chairs for these sessions are asked to pick up a packet of surveys while onsite at the meeting and distribute the evaluations at the session. Drop boxes will be available for attendees to return completed evaluations. We will be emailing you with further instructions prior to the meeting should your session be selected.
- Introduce the participants before their presentations.
- Strictly limit time for each speaker and discussant. While chairs need to be attentive to time allocations, the role of chair is much more than keeping time. A session's success may depend on the Chair's ability to limit the time of presentations and temper discussion from the floor to allow sufficient time for interaction.
- Raise issues that can facilitate audience engagement and moderate panel or floor discussions.
- Adjourn the session in time to allow the room to clear before the next session begins and remind the audience to complete the evaluation form (if applicable).

### *After the Session*

- Complete an electronic survey that AERA will email following the Annual Meeting. All Chairs for all sessions will receive this electronic survey and are expected to complete it.

### Discussant Responsibilities

Discussants are responsible for commenting on papers and presentations to provide professional and constructive criticism and raise issues for broader consideration that connect to these works. Responsibilities fall into the following two areas:

#### *In Advance of the Session*

- Download and read the papers for your session after the April 9 author paper upload deadline, in order to prepare comments and organize your thoughts.
- Prepare appropriate analytical or critical commentaries on the significance and contribution of the papers presented in the session. You are under no obligation to comment on papers not uploaded in the online program.
- Connect with the session chair, who should have contacted you by email, to review the shape of the session and time constraints on the length of discussion.

#### *At the Session*

- Serve as commentator about the papers and issues on substantive points pertaining to these works. It is expected that you draw upon your expertise and views in commenting on papers or presentations; however, it is not the appropriate occasion to present your work.
- Provide comments on papers that will assist authors in taking steps toward publication in order to help authors minimize the time between presentation and publication. Such commentary may include remarks in the session, comments written directly on the papers, and/or discussions with the authors.
- Encourage authors to submit papers to the appropriate AERA journals.

#### *How To Access Author's Papers and Emails*

Chair and discussants within paper sessions should follow the instructions below to access papers uploaded by presenters and authors for your session.

*Step 1.* Login to the [Online Program](#) System using your ID# and password.

*Step 2:* Click the 'My Schedule' link, located at the top right corner of the main menu. You will see a list of sessions in which you are a participant (as chair, discussant, presenter, etc.)

*Step 3:* Click on the 'Title' of a listed session. You will see session information including the participant's emails and papers.

*Step 4:* Click on the 'Download' link in green lettering located next to each paper title. If there is no link associated with a paper title, it means that the author has not uploaded a copy of their paper.

## Division I Schedule-at-a-Glance

	Fri. April 30	Sat. May 1	Sun. May 2	Mon. May 3	Tue. May 4	
7:00		<b>7:00-8:00</b> Strategic Planning VP Suite, Sheraton	<b>7:00-8:00</b> Mentoring Breakfast VP Suite, Sheraton			
7:30						
8:00		<b>8:15-9:45</b> Addressing Disparities in Practice Thru Education (Roundtable) CC Korbel 2	<b>8:15-10:15</b> Assessment and Its Impli- cations for Education (Paper Session) CC 710	<b>8:15-9:45</b> Means and Effects of Scholarly Teaching (Paper Session) CC 710	<b>8:15-10:15</b> Professional Develop- ment: Local Through Global Perspectives (Paper Session) CC 710	
8:30						
9:00						
9:30						
10:00						
10:30		<b>10:35-12:05</b> Recent Developments in Instruct'l Design (Symposium) CC 710	<b>10:35-12:05</b> Motivating Professionals in and to Practice (Roundtable) CC Korbel 2	<b>10:35-12:05</b> Scholarship, the Final Frontier (Invited Address) CC 710	<b>10:35-12:05</b> Investigating Profes- sional Instruction: Explo- rations, etc. (Paper Session) CC 710	
11:00	<b>11:00-12:30</b> Grad Student & Jr. Fac- ulty Pre-Meeting Orienta- tion - Hyatt Regency - Quartz					
11:30						
12:00						
12:30	<b>12:25-1:55</b> Graduate Student Fireside Chat with Dr. Stan Hamstra CC 710	<b>12:25-1:55</b> Factors Affecting Career Choice and Persistence in the Professions (Paper Session) CC 404	<b>12:25-1:55</b> Requirements for Qualita- tive Research Papers (Invited Workshop) CC 710	<b>12:25-1:55</b> Clinical Skills and Their Assessment (Paper Session) CC 710		
1:00						
1:30						
2:00	<b>2:15-3:45</b> Perspectives on Practical Reasoning and Faculty Formation (Symposium) CC 710	<b>2:15-3:45</b> Validity: Translating The- ory Into Practice (Invited Workshop) CC 710	<b>2:15-3:45</b> Restoring Honesty, Trust and Safety in Health Care (Symposium) CC 710	<b>2:15-3:45</b> Noncognitive Aspects of Professional Practice (Paper Session) CC 703		
2:30						
3:00						
3:30						
4:00	<b>4:05-5:35</b> Theories Informing Instruction and Curricu- lum Reform (Paper Ses- sion) CC 710			<b>4:05-5:35</b> Simulation Innovations Across the Professions (Paper Session) CC 710		
4:30						
5:00						
5:30						
6:00	<b>6:00-8:00</b> Division I Executive Committee VP Suite, Sheraton (closed session)	<b>6:15 - 7:45</b> Division I Business Meeting and Reception CC 201	<b>6:00 - 8:30</b> Division I Social at Tag Restaurant, 1441 Larimer St. <i>See page 3 to RSVP</i>			
6:30						
7:00						
7:30						
8:00						
8:30						

**“Denver, the capital of Colorado,  
is nicknamed the Mile-High City  
because its official elevation is  
exactly one mile-5,280 feet  
above sea level.”**

## Division I Sessions & Abstracts

**Friday April, 30**

**11:00am - 12:30pm**

### Division I Graduate Student and Junior Faculty Pre-Meeting Orientation

Hyatt Regency, Room: Quartz

Come enjoy coffee and refreshments before attending your first session! **Ara Tekian** and **Stan Hamstra** will provide an overview of Division I and conference highlights of the week. Also, meet other members from the Division I Mentoring Committee and Graduate Student Representatives.

**12:25 - 1:55 pm**

### Graduate Student Fireside Chat with Stan Hamstra

Colorado Convention Center, Room 710

#### Finding the Right Balance Between Research and Professional Practice: Opportunities to Expand Educational Research in the Professions



Conducting educational research in the professions provides unique opportunities to apply and validate education theory to explain a wide variety of phenomena. Taking advantage of these opportunities requires a balance in focus between the “home discipline” and the profession. This tension has been characterized in terms of research for “producers” (i.e., other researchers) and research for “users” (i.e., members of the profession). Finding this balance is a dynamic process that most in education in the professions confront regularly. How one selects a balance point depends on many forces. This fireside chat will describe this issue, provide insights, and foster an open discussion among members of the audience. The chat will be led by Stanley J. Hamstra, Ph.D., Acting Assistant Dean, Academy for Innovation in Medical Education, at the University of Ottawa Faculty of Medicine. Dr. Hamstra, an experimental psychologist, is also the Research Director of the University of Ottawa Skills and Simulation Centre and Associate Professor, Departments of Medicine, Surgery, and Anesthesia.

**2:15 - 3:45pm**

### Perspectives on Practical Reasoning and Faculty Formation: Bridging the Liberal Arts and Sciences With the Professions (Symposium)

Colorado Convention Center, Room 710

#### Session Summary

With practical reasoning as a grounding concept, this symposium will canvass the interconnections among and outcomes of the following: 1) a national, multi-institutional, interdisciplinary seminar that focused on the challenge of student formation for lives of reasoned action; 2) a single university iteration of the same interdisciplinary seminar involving faculty partners from the arts and sciences and professional programs; and 3) a case study of one faculty partnership including critical reflection on their disciplinary pedagogies. The symposium will offer participants ways to purposefully explore and expand the concept of practical reasoning at their institutions and broader implications for professional and liberal education.

... there is nothing more professional than liberal education, properly construed: there is nothing more liberal than professional education, properly construed; there is only limited potential for practical learning without engagement in liberal learning; and there is only limited potential for liberal learning without engagement in practical learning. (Shulman, 2004)

Often faculty exist in academic silos focused on their disciplinary perspective. Conversations among faculty and administrators across the campus frequently target resource allocation and inequalities among disciplines rather than what various disciplines have to contribute to one another. The Carnegie Foundation for the Advancement of Teaching implemented an interdisciplinary seminar, “A Life of the Mind for Practice” that organized faculty representing the liberal arts and sciences with the professions from a variety of colleges and universities. The faculty who participated in the seminar, regardless of disciplinary background, employed pedagogies that exemplified the challenge of placing student formation for “lives of reasoned action” at the center of their teaching mission.

While it was Aristotle who first codified the distinction of reasoning into practical and theoretical forms, this concept continues to be reformulated. Senior scholar at the Carnegie Foundation, Dr. William Sullivan will summarize the findings and implications of the seminar in the first paper of the symposium. Sullivan uses practical reasoning as one of the central concepts underlying the interdependence of liberal and professional education in several of Carnegie’s initiatives. Sullivan describes practical reasoning as a three-fold movement or pattern of thinking. While scientific analysis and problem solving are important skills in professional practice, the ability to engage and learn through the social process - interactions and relationships of practice or apprenticeship - is just as important. Sullivan argues that liberal education is also concerned with teaching judgment and complex reasoning in uncertain and changing situations.

The implications of replicating the Carnegie seminar model on a single campus were unknown. The second paper describes the implementation of the seminar at a private, Midwestern university. A series of three intensive seminars explore evidence of teaching that attempts to bridge between theory and practice. Further, the seminars focused on faculty formation and responsibilities for student learning and formation in a Jesuit/Catholic institution. The university in which the pro-



ject was based proved ideal because of the number of professional programs coupled with a strong undergraduate education. The opportunity for a critically reflective look at teaching provided faculty with a language and framework to study and practice their disciplinary pedagogies while forming and informing other faculty's practices and pedagogies. The project also provides a model of collaborative faculty-development across disciplinary lines that other institutions could employ to investigate the teaching of practical reasoning and enhance student learning across higher education. The final paper highlights the insights of one faculty partnership, a philosopher and a physical therapist, regarding differences and similarities in teaching to prepare students for the challenges they will face in their lives and professions, best teaching practices and insights, and understandings of the purpose of higher education.

### Session Participants:

#### Practical Reasoning: Forming a Life of the Mind for Practice

William M. Sullivan (The Carnegie Foundation for the Advancement of Teaching)

The central educational practices of today's universities and colleges typically direct students' attention to mastering procedures for describing particular events and objects in terms of general concepts. That is, they teach analytical reasoning. Since all fields, including the health professions, do their actual occupational training in settings of practice, the social function of the university is not nearly as "practical" as often imagined. In large part, the university is a culture-shaping institution. It inculcates a respect for, if not a full competence in, analytical thinking and its products, especially the sciences and technology. It is this culture-shaping role that makes university education increasingly the entry ticket to economic and social participation not only in the United States, Europe, and Japan, but throughout the developing world. At the same time, the relation of this training to students' struggles for meaning and orientation in the world, as well as ethical judgment, is all too rarely given curricular attention or pedagogical emphasis. A recast liberal education, however, must go beyond the purely analytical to provide students with experience and guidance in using such analytical tools to engage in encounters with questions of meaning and deliberation about action. It will, I believe, become centered upon teaching the art of practical reasoning—the art of placing analytical concepts into a mutually illuminating relation with sources of meaning and responsibility in the world of practice. The teaching of practical reasoning enables students to learn explicitly how to move between the distanced, external stance of analytical thinking—the "third person" point of view typical of most academic thinking—and the "first and second person" points of view that are internal to acting with others in a situation. Practical reasoning is this back-and-forth between general knowledge, and analytical thinking, and the challenges and responsibilities that come with particular situations. It means an ongoing process of reflection whose end is the formation of habits of critical judgment for action. The pedagogical vehicles for teaching this movement between viewpoints are varied: the case study; literary exploration of character and response to challenge; the simulation; participation and reflection upon actual involvements in the world. But their common feature is recognition that in practical reasoning it is always the involved stance, the point of view internal to purposeful human activity that provides the ground and the goal critical, analytical reasoning. This perspective opens reasoning—and the reasoners—to connection with experiences and perspectives that include but transcend the distanced, external viewpoint of analysis.

#### Reflections on Faculty Formation and Practical Reasoning

Gail M. Jensen, Amy Haddad, Kathryn N. Huggett, Mary Ann

Danielson, Linda Gabriel (Creighton University)

A series of intensive, interdisciplinary seminars, modeled after the Carnegie Foundation seminar, serve as the primary heuristic for both faculty reflection and the analysis of this faculty development project. We wondered what would be gained from replicating this cross-discipline seminar focused on practical reasoning at one institution? This paper will share the insights and findings into the process and outcomes of implementing such a seminar that focused both on faculty formation and practical reasoning in a comprehensive, modest sized private institution with six professional schools along with strong liberal arts education. For these three intensive seminars, we selected faculty teacher-scholars (16 participants) from each of the Schools and Colleges based on previous interactions across disciplinary lines, toleration of ambiguity, and a tendency toward critical reflection. We purposefully assigned the pairs, matching a faculty member from arts and science with a faculty member from one of the professions (e.g., medicine with education; dentistry with peace and justice studies; physical therapy with philosophy). We began by asking seminar participants to respond to broad questions: What is the purpose of higher education? How should institutions respond pedagogically to the challenge of preparing students for today's world? We next moved to questions closer to home: In what ways could the professions and the liberal arts employ one another's insights to achieve this end? What is the role of practical responsibility and judgment in contemporary higher education? We then moved to questions specific to reflection on their own teaching: Imagine the lives of your students and the reasoning required for them in the future—what would that be? What situations that require practical judgment might your course contribute? What is the narrative in your course? What is the moral or purpose of your course when viewed as a narrative? Seminar participants posted their written materials on our seminar course site. These written materials along with notes taken summarizing the key points of the seminar discussion were used in the data analysis. Initial analysis was done looking across the individual faculty responses, faculty pairs, and all participants. We found faculty intensely engaged in the seminar sessions and welcomed the opportunity to work across disciplines. There was a progression of learning, individual and collective understanding of practical reasoning that emerged. Questions that facilitated a single focus purpose or decision such as – what is the moral of the course? often uncovered for faculty a potential over emphasis on content and lacking focus on meaning and application. "I would cover less data mining methods and emphasize managerial implications," "I would add a stronger focus on what it means to be a leader." Not all faculty moved to the same place, for some faculty, they struggled to move beyond the technical mechanics of course design and teaching to a broader view of learning. Faculty need and appreciate time and space to engage in interdisciplinary, collaborative dialogue. Teaching for practical reasoning and judgment may be a valuable tool and unifying call for working across disciplinary silos.

#### Aristotle Breaks a Leg: Shared Reflections of Two Faculty

Kirk Peck, Amy Wendling (Creighton University)

We came from two very different paradigms, Physical Therapy and Philosophy. The physical therapy faculty member teaches a required six-course professional formation seminar series. The philosophy faculty member teaches a course in the philosophy of law for upper level undergraduates, many of whom will major in law or work in politics. We were surprised to discover how much shared terrain and intent our syllabi and teaching strategies have, especially in the realm of practical reasoning. In particular, both faculty emphasize values, value formation, and ambiguities of experience that routinely occur both in patient care and in negotiations with the law. Physical therapy stu-

dents engage in a series of service components to bridge the gaps between textbook encounters and real patients. When the humanistic element is emphasized in a textbook, ambiguities occur, particularly with respect to issues of culture, and socio-economic class. Philosophy students learn to treat the law as a long, complex tradition worth respecting but also fallible and revisable, and are asked to contemplate who views the law as advancing his or her interests and who may view the law as being hostile. We discovered this shared terrain during intensive multi-day seminars in conjunction with review of our teaching materials, personal dialogue, and reflections. In the first seminar, we imagined the kind of professional lives our students would have, and how the formation of personal and professional values would affect those lives. We both offer students different world-views than what they initially bring to class in their assumptions about people and the law. The physical therapy courses integrate service requirements to expose students to social injustices that occur in community life. For example, students work with Hispanic and African-American children who are at risk for obesity due largely to a lack of adequate health care resources. The first philosophy of law course has a component on the interactions between African Americans and the law, in addition to addressing the issue of immigration. During subsequent seminars, we discussed implicit and explicit moral narratives of our courses. Our reflections began to deepen, and we soon recognized shared commitments to issues of social justice that also reflected a Jesuit mission. We provide students with tools to confront empirical injustices that may only be anticipated in the classroom. Practical judgment implies an ability to link a specific case with a more general set of rules even if the case is unfamiliar to the student. We hope students eventually learn to habitually recognize and act upon forms of social injustice wherever they occur. Finally, we came to realize that life really does come full circle. Had Aristotle actually broke his leg, and who is to say he did not, then reliance on good advice for recovery would have been essential: philosopher meets healing practitioner. Herein lies the beauty of connecting two unsuspecting faculty in a seminar designed to share divergent insights. Both the philosopher and the physical therapist recognized that engaged learning through practical reasoning and reflection was the cornerstone of pedagogical design.

*Chair:* Anna E. Richert (Mills College)

*Discussant:* Patricia O'Sullivan (University of California - San Francisco)

**4:05 - 5:35pm**

### Theories Informing Instruction and Curriculum Reform (Paper Session)

Colorado Convention Center, Room 710

#### Session Participants:

#### Crossing Interprofessional Education Boundaries: An IPE Delivery Model for the Health Sciences and Beyond

Shana Michele Shaw, Christina M. Cestone, Marilla D. Svinicki, Stephen Marc Walls (University of Texas)

The current proposal describes the development process for a new model of delivering interprofessional education (IPE) opportunities to students enrolled in a variety of health science and related programs. Objectives guiding these processes include providing IPE opportunities across institutions, using pedagogical theory to inform the development and evaluation of these activities, and incorporating these learning opportunities into the curriculum for students in health science and related fields. Evaluation findings indicate some success in achieving these objectives and provide direction for ways to improve this model in the future. In general, these findings inform the more general

inquiry into which mechanisms promote or hinder IPE activities and incorporation of IPE into established curriculum. Practical implications for implementing IPE are also discussed.

#### Curriculum Revisions and USMLE Step 1 Scores: What Does It Take to Make a Difference?

Steven A. Lieberman & Ann W. Frye (University of Texas - Medical Branch at Galveston)

The difficulty of curriculum reform in professional education programs is compounded by institutional factors and a lack of evidence that educationally sound practices produce meaningful improvements in outcomes. Over several years, we implemented numerous changes in our medical education environment and herein report student scores on the USMLE Step 1 examination for students in the Traditional Curriculum and the Integrated Medical Curriculum. The failure rate decreased by 74%; the mean score difference between curricula was 14.0 points (effect size=0.68). Larger effect sizes were seen for underrepresented minority students (0.75), African-American students (1.11), and women (0.75). In the context of previous reports, these results suggest that changes in curriculum-level outcomes may be greater following comprehensive as opposed to focused curriculum reforms.

#### Defining in Situ, Multidisciplinary, and Interdisciplinary Work in Engineering Education

Betsy Palmer, Barbara Komlos, Carolyn Plumb, Sarah Codd (Montana State University), Katie Piacentini (University of Missouri - Columbia), Rose Marra (University of Missouri)

Engineering accreditation criteria require evidence that students can work in multidisciplinary teams. However, ABET does not define the term "multidisciplinary". This qualitative study investigates how engineering faculty use the constructs of interdisciplinary/multidisciplinary as they design engineering curricula. We interviewed 67 faculty and administrators at two universities for this project. Our results indicate that the individuals in our sample use definitions that are often inconsistent with each other and may be incongruent with the expectations of ABET. Their definitions are also frequently at odds with the definitions provided by experts in education. We use the theoretical framework of discourse communities to explore how history, ecology, values and institutional structures influence the use of these terms in these two communities.

#### How Theories Function in Practice and Praxis

Betsy V. Martens (University of Oklahoma)

This research represents results from a comparative case study of six different theories dating from the 1970s in the fields of finance, health, law, management, military science, and theology. The objective was to identify the specific "functions" of theories and their diffusion "through" various disciplines via a variety of channels. The theory functions identified through this analysis include accessibility, applicability, connectivity, constructivity, generativity, and reflexivity. Methods employed for this research included citation analysis, content analysis, and conceptual analysis of a corpus of nearly 3,500 documents dating from the past 30 years in order to develop a "meta-model" of theory functions intended to be helpful in the education of future researchers.

*Chair:* Bridget O'Brien (University of California San Francisco)

*Discussant:* Summers G. Kalishman (University of New Mexico)

**6:00 - 8:00pm**

### Division I Executive Committee Meeting

VP Suite, Sheraton (closed session)

## Saturday May, 1

**7:00 - 8:00 am**

### Strategic Planning

VP Suite, Sheraton

**8:15 - 9:45am**

### Addressing Disparities in Practice Through Education (Roundtable Session)

Colorado Convention Center, Korbel Ballroom 2

#### Session Participants:

#### Considering Access Disparities: The National Dental Pipeline Program and Students' Cultural Sensitivity, Social Consciousness, and Underserved Population Orientation

Ifie Mary Frances Okwuje & Eugene L. Anderson (American Dental Education Association)

In 2001, the Robert Wood Johnson Foundation, the W.K. Kellogg Foundation, and The California Endowment funded a dental pipeline program including fifteen dental schools in an effort to address and reduce oral healthcare disparities. This study explores if attitudes on cultural sensitivity, health care-focused social consciousness, and underserved populations of students graduating from participating institutions differ from students at non-participating institutions. Multivariate regression analyses are conducted using data on 2008 graduating seniors from the American Dental Education Association and the American Dental Association. The study promotes understanding of whether students' dental education experiences in environments fostered through the pipeline program influence their attitudes on carrying out their larger mission as service-oriented, culturally sensitive, and socially conscious health professionals.

#### Factors Related to Minority Graduate Enrollment in STEM Fields: An Institutional-Level Analysis

Amanda Ostreko (The University of Kansas)

Universities and graduate councils are concerned that minority participation rates will not advance enough to meet future labor demands in science, technology, engineering, and math (STEM) fields that require advanced degrees. In order to meet these employment needs, institutions will need to know what influences minority graduate student enrollment. This study used Integrated Postsecondary Education Data System (IPEDS) and NSF/Division of Science Resources Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY 2007 data to determine if there was a relationship between institutional-level variables and minority graduate enrollment in STEM fields. Results revealed that minorities were more likely to enroll in STEM graduate programs in smaller and Master's I colleges.

#### Eliminating Health-Care Disparities: The Role of Nurse Educators

Kenya Beard (Adelphi College School of Nursing), Richard Joseph Walter (Dowling College)

A diverse nursing workforce can be achieved by graduating nursing students who mirror our nation's population. However, the academic achievement gap for minority nursing students contributes to racial

and ethnic healthcare disparities. The purpose of this phenomenological study was to gain an understanding of the experiences of nursing faculty and to examine how the role of educating minority students was understood by faculty. This study revealed that nursing faculty in schools with high nursing licensure pass rates tended to have higher expectations for minority students and demonstrate behaviors that assisted minorities in achieving academic success more than faculty in schools with lower nursing licensure pass rates. Increasing awareness of best practices which facilitate knowledge acquisition for minority students is warranted.

*Chair:* Bryan Joseph Cook (American Council on Education)

**10:35am - 12:05pm**

### Recent Developments in Instructional Design and Assessment in Medical Education

(Symposium)

Colorado Convention Center, Room 710

#### Session Summary

The four contributions in this symposium focus on recent developments in the design of instruction and assessment in medical education. Two contributions focus on example-based learning. The first concerns instruction on ECG analysis skills, the second on taking physiotherapy patients' histories via worked examples. The latter also takes into account effects of the expertise of the students and of the model on whom the example is based. The third contribution investigates the effects of deliberation with/without attention in medical diagnosis, also taking into account the effects of expertise. The fourth contribution focuses on assessment of the degree of students' patient-centeredness and empathy, factors that are expected to contribute to better clinical performance, with an 8-station Objective Structured Clinical Examination.

This session aims to present empirical studies reflecting recent developments in research on instructional design and assessment in medical education. The first two contributions focus on example-based learning, which has been widely studied in research on instructional design in highly structured domains such as math or science, but very little in more complex (i.e., less structured) domains such as medicine. The first study by Van de Berge et al. concerning instruction on ECG analysis skills showed that studying worked examples is a more effective means of acquiring those skills than solving equivalent problems oneself. The second study by Boekhout et al. concerned instruction on history taking of physiotherapy patients via worked examples. This study compared effects on students' learning of the expertise of the model on whom the example is based (expert or third-year student) in relation to students expertise (first or second-year), and showed that for this task, an expert example was more effective for both first and second-year students. The third contribution by Mamede et al. investigated the effects of deliberation with/without attention in medical diagnosis, also taking into account the effects of expertise. It was shown that experts (physicians) made better diagnostic decisions when they consciously thought about a complex case, whereas conscious deliberation had no effect on simple cases. Students, in contrast, made poorer decisions when forced to consciously deliberate about complex cases, and benefited from deliberation without-attention on simple cases, making better decisions after unconsciously thinking about the cases. The fourth contribution by Wimmers & Stuber focuses on assessment of the degree of students' patient-centeredness and empathy, which foster a positive physician-patient relationship and as such contribute to better clinical performance, but

are often not assessed by existing cognitive measures of students' performance. Therefore, this study investigated the use of an 8-station Objective Structured Clinical Examination for capturing the degree of students' patient-centeredness and empathy.

The findings from the studies presented here are primarily relevant for researchers and practitioners involved/interested in medical education, providing insight into new instructional methods that may enhance learning and performance, as well as techniques for assessing clinical performance more completely. However, there is no reason to assume that the effects of different instructional methods discussed here would not apply to other professional domains, so we believe this session to be interesting for the broader Division I audience. Moreover, these studies also have the potential to advance the research on instructional design more generally, and may therefore also appeal to Division C's audience (providing potential co-sponsoring opportunities). Each presentation will have a duration of 15 min. followed by questions from the audience. The discussants are experts in the field of instructional design (Fred Paas) and medical expertise/education (Henk Schmidt) and they will provide discussion of each of the studies and the overarching theme and will open up the discussion between the presenters and the audience.

### Session Participants:

#### The Effect of Worked Examples on ECG Interpretation

Kees van den Berge, Remy M. Rikers, Silvia Mamede, Henk G. Schmidt, Jan van Saase (Erasmus Medical Center and University, Rotterdam, Netherlands)

The effect of instructional design on performance and learning has been extensively studied in different, well structured, domains such as physics and mathematics (see e.g., Sweller, Van Merriënboer, & Paas, 1998). The dominant theoretical framework within instructional design research is the Cognitive Load Theory (Sweller et al., 1998), which focuses on the development of instructional methods that efficiently use people's limited cognitive processing capacity to stimulate their ability to apply acquired knowledge and skills to new situations. One of the most interesting findings resulting from CLT-research is the worked-out example effect. Learning from worked examples means that students are provided with multiple examples before attempting to solve problems on their own. In comparison to learning by problem solving, learning from worked examples is a very effective method for the initial acquisition of cognitive skills (see Atkinson, Derry, Renkl, & Wortham, 2000; Sweller et al., 1998). This 'worked-example effect' is usually explained by pointing to the fact that studying worked examples imposes lower levels of cognitive load on the learner than solving training problems – mainly because no extensive search processes with regard to the correct solution steps are involved. As a result, more cognitive resources might be left for the learner to engage in processes of schema construction. In the present study two approaches, a conventional problem solving and worked examples approach were compared in the more complex domain of medicine. After testing the subjects on prior ECG knowledge the teaching phase started. The initial part of this phase was equal for all participants. After teaching the basics of ECG analysis we randomly assigned the participants to one of two practice conditions: (1) worked examples, or (2) identical material presented as conventional problems. Effectiveness of the instructional material was measured by performance on a post-test containing filler ECG examples along with the learned conditions. Transfer was evaluated by exposing the participants to more complex ECG formats. We expected a beneficial effect from the worked example approach. A significant difference was found between the mean percentage of problems correctly solved by both groups on the diagnostic task during the test phase. The problem solving approach result-

ed in a test diagnostic accuracy of 90.91% (SD = 12.61) whereas the worked examples led to 100% accuracy. Mental effort (a measure of experienced cognitive load) in the test phase did not differ significantly between the two groups in any of the phases. Note though, that because the performance did differ significantly, this effort was likely invested in different cognitive processes, with those processes being more effective for learning in the examples condition. We conclude from this first experiment in the medical domain that a cognitive load based approach in teaching ECG diagnoses is beneficial with respect to diagnostic performance. Applying the various CLT-based techniques in medical education seems a promising approach for both researchers and practitioners.

#### Example-Based Learning in Medical Education: Effects of Model Expertise in Relation to Student Expertise

Paul Boekhout (Open University of The Netherlands/Maastricht University), Tamara Van Gog (Erasmus University Rotterdam), Margaretha W. J. Van De Wiel (Maastricht University), Dorien Gerards-Last (Zuyd University of Applied Sciences), Jacques Geraets (Zuyd University of Applied Sciences)

Example-based learning is an effective instructional method (Atkinson et al., 2000; Sweller et al., 1998) that has been extensively studied from both a cognitive perspective (worked examples) and a socio-cognitive perspective (modelling examples), but its effects have hardly been investigated in complex domains such as medical education. Whereas worked examples typically present written-out ideal (didactical) solutions, modelling examples may involve real expert, as well as real student models demonstrating solution procedures to students. This study brings both perspectives together, by investigating the effects of worked examples of physiotherapy patient history taking based on expert and advanced student models. There are important differences between experts and advanced students in medical knowledge and as a consequence in their handling of cases (Schmidt & Rikers, 2007). Because experts possess extensive domain knowledge, which is, moreover, organized in abstract representations, the way an expert performs the task may be at such a high level of abstraction that it could pose problems for novices' understanding of the demonstrated procedure. Students who have some more prior knowledge on the other hand, might benefit from those expert models. A 2 x 2 factorial design was used with factors 'Student Expertise' (First-year vs. Second-year) and 'Model Expertise' (Expert vs. Advanced Third-Year Student). Within each expertise level, students were randomly assigned to either the Expert Model condition (First-Year: n = 29; Second-Year: n = 38) or the Advanced Student Model condition (First-Year: n = 32; Second-Year: n = 35). All students studied two examples (model depending on their assigned condition) and then completed a retention and transfer test task. They rated their invested mental effort (a measure of experienced cognitive load) after each example and test task. The examples consisted of the questions the model would ask during history taking based on case descriptions of patients who experienced physical impairment in the knee or calf and had previously had a stroke. The transfer case concerned a person with shoulder impairments in combination with a stroke. The first-year students had very little experience with patient history taking and this experience was limited to orthopaedic cases, whereas second-year students had more experience with history taking and had taken a course on possible neurological causes of orthopaedic problems. As one might expect given their higher expertise, second-year students invested less mental effort in studying the examples, and in performing the retention and transfer tasks than first-year students. They also performed better on the retention test. In contrast to our hypothesis, there was no interaction between student expertise and model expertise in transfer test performance: All students who had studied the

Expert Model examples performed better on the transfer test than students who had studied Advanced Student Model examples. This study suggests that for learning history taking, expert models are to be preferred over advanced student models. In general, however, transfer performance was rather low, suggesting that maybe the ideal, didactical models typically used in worked-examples research might even be a better option, but further research would be required to test this assumption.

### “Think Before You Act!” The Deliberation Without Attention Effect in Medicine

Silvia Mamede, Henk G. Schmidt, Remy M. Rikers (Erasmus University Rotterdam, Netherlands)

Dijksterhuis et al. (2006) conducted a series of experiments demonstrating a peculiar phenomenon: the “deliberation-without-attention” effect. When participants had to pick the best product from a collection (e.g., the best car among a number of cars), they were more likely to do so when the investigators prevented them from thinking about their decision by giving them a distraction task. Being allowed to think about their choice, performance was poorer when the choice was sufficiently complex – on simple problems, conscious deliberation helped more than deliberation without attention. We raise some issues concerning these counterintuitive findings by Dijksterhuis et al. (2006) here. First, methodological pitfalls may be involved. In their studies, participants worked with problems that could hardly simulate real life situations (e.g., problem attributes were assumed to have similar weight). As an automatic reasoning condition was absent, it is not known whether an immediate decision would not have been better than deliberation after unconscious thought. Furthermore, there was no attempt to control whether participants were in fact consciously thinking about the problems in the deliberation-with-attention condition (i.e., no evidence of participants’ thoughts was collected). Furthermore, a crucial issue is the experience of the decision-maker with the problems to be solved. Participants in their studies were novices without extended knowledge in the domain. The present study tried to tackle these issues within the domain of medical expertise. We requested residents in internal medicine and fourth-year medical students to diagnose both complex and simple clinical cases under three experimental conditions: automatic reasoning, unconscious thought or conscious thought. Complex cases comprise uncommon diseases, association of various diseases or atypical presentations of a disease. In the automatic reasoning condition, participants were asked to read the case and indicate the first diagnosis that comes to mind. In the unconscious thought condition participants read the case and subsequently solved anagrams, after which they were asked to provide the diagnosis. In the conscious thought condition, participants were requested to read the case and indicate an initial diagnosis. They were subsequently instructed to indicate elements of the case that corroborate and refute their initial hypothesis, write down alternative hypotheses, and proceed with similar analysis for each alternative diagnosis. After this analysis, they indicated the likelihood of the several hypotheses and made their final decision on the diagnosis. The results show that physicians made better diagnostic decisions when they consciously thought about a complex case, repairing a wrong diagnosis initially considered after thoroughly processing case information. However, this approach did not help in simple cases: experts’ decisions were equally good with automatic reasoning, unconscious thought or conscious thought. Students, however, made poorer decisions when forced to consciously deliberate about complex cases. They performed better in the automatic condition. When problems were simple, students benefited from deliberation-without-attention, making better decisions after unconsciously thinking about cases. In contrast to Dijksterhuis et al.’s (2006) conclusions, this study shows

that experts can make better decisions after conscious, careful analysis, when problems are complex, whereas the mode of reasoning does not matter in simple problems.

### Assessing Medical Students' Empathy and Attitudes Toward Patient-Centered Care With an Existing Clinical Performance Exam

Paul F. Wimmers & Margaret Stuber (University of California - Los Angeles)

A good physician-patient relationship is considered crucial for the delivery of high-quality medical care and favorable attitudes toward patient-centered care are often associated with more favorable patient-defined outcomes (Haidet et al., 2002). It is expected of medical students to not only be able to communicate effectively, but also to show compassion and responsiveness to patient needs. Existing cognitive measures of students’ performance fail to measure the quality of the physician-patient relationship. This research was performed to study the ability of an 8-station Objective Structured Clinical Examination (OSCE) to capture the degree of students’ patient-centeredness and empathy. A cohort of 101 Class of 2008 year 3 students (78% response rate) of UCLA medical school completed the 18-item Patient-Practitioner Orientation Scale (PPOS) (Krupat et al., 1999) and the 20-item Jefferson Scale of Empathy (JSE) (Hojat et al., 2002). Both tests are self-administered and use 6-point Likert scales. The PPOS measures students’ attitudes towards the physician-patient relationship and has two subscales called ‘sharing’ and ‘caring.’ The JSE is designed to measure empathy among physicians, health professionals and medical students. The OSCE involves a series of short clinical encounters with a standardized patient (SP). All cases in the OSCE were developed by a panel of experts from 8 California medical schools. SPs in an OSCE evaluate students’ history taking and physical examination skills, information sharing, and physician-patient interaction by using checklists. We included USMLE Step 1 scores for validation purposes. The reliability of the PPOS and JSE were .74 and .75 (Cronbach’s alpha), respectively. The correlation between the sharing and caring subscales was significant,  $r = .57, p < .0001$ . The correlations between the sharing and caring dimensions of the PPOS and the overall JSE score were large, .58 and .69 ( $p < .0001$ ), respectively. The overall PPOS and JSE scores were also highly correlated ( $r = .71, p < .0001$ ). The PPOS had no significant correlation with any of the OSCE components. The JSPE had a moderate significant correlation with the patient-provider interaction component of the OSCE ( $r = .23, p = .023$ ). USMLE Step 1 scores had no significant correlations with any of the variables used in this study (PPOS, JSE, and OSCE components). There is a gender effect; female students scored significant higher on the PPOS sharing subscale and showed higher levels of empathy (as measured by the JSE) than male students ( $t = 2.3, df = 99, p = .023$  and  $t = 2.5, df = 99, p = .014$ , two-tailed, respectively). If favorable attitudes toward patient-centered care are associated with better patient-defined outcomes then these favorable characteristics could be beneficial on a clinical performance exam (OSCE). Level of patient-centeredness and empathy had no associations with cognitive measures of performance (represented by USMLE Step 1) and only empathy showed a moderate association with students’ quality of patient-provider interaction on the OSCE. Medical education increasingly emphasizes the importance of a positive physician-patient relationship but the consistent assessment of empathy and level of patient-centeredness is challenging (Hemmerdinger et al., 2007).

*Chair:* Remy M. Rikers (Erasmus University Rotterdam)

*Discussant:* Fred Paas (Open University of the Netherlands/ Erasmus University Rotterdam, Netherlands)

*Discussant:* Henk G. Schmidt (Erasmus University Rotterdam)

12:25 - 1:55pm

### Factors Affecting Career Choice and Persistence in the Professions (Paper Session)

Colorado Convention Center, Room 404

#### Session Participants:

#### Unpacking Intention to Persist in Engineering: Its Relationship to Gender, Ethnicity, and Classroom Experiences

Rose M. Marra (University of Missouri), Demei Shen (University of Missouri - Columbia), Barbara Bogue (Penn State University), Chia-Lin Tsai (University of Missouri)

Given the growing demand for engineers, engineering retention continues to be an issue of interest. The purpose of the study is to investigate the classroom interaction / climate and learning activity factors, by gender and ethnicity that influence self-reported student intention to persist in engineering a large engineering degree granting institution in the eastern U.S. Results indicate that learning factors such as student centered activities are an influence on majority students' intentions to persist, and that the nature of teacher initiated interactions influences nearly all students intentions to persist.

#### Influence of School and Family on STEM Career Choice: A Qualitative Look at Contextual Variables

Fanni Liu Coward (Texas Tech University), Amani Zaier (Texas Tech University), Doug D. Hamman (Texas Tech University)

Recent U.S. reports decry the status of STEM education. Findings based in the Social Cognitive Career Theory suggest that efficacy and outcome expectancies influence interest in specific careers. Contextual variables related to environmental supports and constraints are also proposed, but are currently narrowly defined. This study gathered and analyzed freshman- and sophomore-engineering students' perceptions of contextual supports and constraints. Findings from this grounded-theory approach reveal that traditional sources of influence, such as family and friends, figured prominently in students' descriptions. In addition, however, influences from schools and teachers were also identified, including "how" these influences impacted students' deliberations. Discussion focuses on how educators can best use this information to inform policy and guide practice related to reform of STEM education.

#### Factors Influencing the Transition to Graduate-Professional School or Industry for High-Achieving Black STEM Students

Dawn G. Williams (Howard University), Lorraine Fleming (Howard University), Viara Quinones (Howard University)

Research suggests that a successful transition and completion of graduate school relies heavily on the experiences of the first year. Although there is research that addresses the factors influencing the transition to graduate school, there are very few studies, if any, that address this issue among high achieving Black STEM students. Utilizing Social Cognitive Career Theory, this longitudinal study employed a mixed method approach to investigate what career decisions students were making immediately upon graduation and its associated factors. Additionally, we investigated the transition to graduate school, professional school, and industry. Findings revealed the academic program, research experience, involvement in academic and professional organizations, orientations, and mentorship had a significant impact on STEM students' self-efficacy during their post baccalaureate transition.

#### Impact of Changing Certification-Licensure Requirements on the International Medical Graduate Examinee Pool

Danette W. McKinley (Foundation for Advancement of International Medical Education and Research), Amy Opalek (Foundation for Advancement of International Medical Education and Research), John R. Boulet (Educational Commission for Foreign Medical Graduates)

Three groups of international medical graduates (IMGs) seeking certification based on the year of their first examination registration were compared. Descriptive statistics (counts, percents) were calculated and comparisons between the groups based on citizenship at medical school (US citizen vs. non-US citizen) were made for markers of progression from registration to certification and to US practice. Overall, 62% achieved ECFMG certification, 51% of them were in US practice, and 35% were specialty board certified. There were shifts in the distribution of examinees based on citizenship (18% of 1989 registrants were US citizens attending medical school abroad vs. 23% in 1999). These differences appear to be related to varying rates of progression from registration to entry to US practice.

*Chair:* Bianca L. Bernstein (Arizona State University)

*Discussant:* Patricia S. O'Sullivan (University of California - San Francisco)

2:15 - 3:45pm

### Validity: Translating Theory Into Practice

(Invited Workshop)

Colorado Convention Center, Room 710

#### Session Participants:

Michael T. Kane (ETS)

Susan M. Case (National Conference of Bar Examiners)

Michael T. Kane is currently the Samuel J. Messick Chair in Validity at the Educational Testing Service. Previously, he was Director of Research for the National Conference of Bar Examiners, a professor at the University of Wisconsin-Madison and a senior research scientist at ACT. His main research interests are validity theory and practice. Susan Case is the Director of Testing at the National Conference of Bar Examiners. She has worked on various assessment methods, including oral and essay exams, written clinical simulations, standardized patients and multiple-choice item formats within the professions, including law as well as medicine.

6:15 - 7:45pm

### Division I Business Meeting and Reception

Colorado Convention Center, Room 201

Open to all

**Sunday May, 2**

**7:00 - 8:00am**

**Mentoring Breakfast**

VP Suite, Sheraton

**8:15 - 10:15am**

**Assessment and Its Implications for Education (Paper Session)**

Colorado Convention Center, Room 710

**Session Participants:**

**Assessing Raters for Workplace-Based Assessment: A Cognitive Approach**

Marjan Govaerts, Lambert Schuwirth, Cees van der Vleuten, Arno Muijtjens (Maastricht University)

The present study explores cognitive processes that are related to judgment and decision making by raters when observing performance in the clinical workplace. The conceptual framework is shaped by cognition-based models of performance assessment and expertise research. We specifically focus on how differences in rating experience influence information processing by raters. Think-aloud studies were conducted to assess differences between experienced and non-experienced raters with respect to time spent on problem analysis and problem representation; information processing; and performance ratings. Our findings seem to be consistent with other findings on expertise research. Results show expert--novice differences in raters' knowledge structures and reasoning processes when judging trainees' performance. Implications for WBA are discussed.

**Measuring Student Activity in Problem-Based Tutorial Groups: Reliability and Validity of a Peer Rating Scale**

Rachelle Kamp (Maastricht University), Diana Dolmans (Medical School, Maastricht University), Henk M. Van Berkel (Maastricht University), Henk G. Schmidt (Erasmus University Rotterdam, Netherlands)

The purpose was to investigate whether students can evaluate the activity of their peers in a problem-based tutorial group in a reliable and valid way. Students ( $n = 196$ ) were evaluated by their peer students on three main aspects: their constructive, collaborative and motivational contributions to the group. A confirmatory factor analysis demonstrated that the data fitted the three factors reasonably well. The alpha coefficients and generalizability studies indicated good internal consistency when students were evaluated by, at least, four peers. In conclusion, peer ratings provide reliable and valid information about a student's activity in the tutorial group, if at least four peer ratings are available out of a group of eight students.

**Construct Validity of Three Clerkship Performance Assessments**

Ming Lee & Paul F. Wimmers (University of California Los Angeles)

This study examined construct validity of three commonly used clerkship performance assessments: preceptors' evaluations, OSCE-type

clinical performance measures, and the NBME exams. Six hundred and eighty-six students taking the inpatient medicine clerkship from 2003 to 2007 participated in the study. Exploratory and confirmatory factor analyses using the structural equation modeling procedure were adopted to examine the latent domains underlying various indicators assessed by these three measures and the pattern of indicator-domain relationships. Three separate, though correlated, constructs, labeled Clinical Performance, Interpersonal Skills, and Clinical Knowledge, were confirmed by factor analyses. The three domains tapped a common higher-order construct, Clinical Competence, in varied degrees of magnitude (.56, .69, .77, respectively). Findings revealed the need for a multiple-trait-multiple-method approach to clerkship assessment.

**"That Would Make a Great Qualifying Exam Question": Engineering Expert Institutional Bias Surrounding Complex Problems**

Stephanie Rivale, Taylor Martin, Kathy J. Schmidt, Kenneth R. Diller (University of Texas - Austin)

This paper compares engineering expert problem-solving on highly constrained routine problems and ill-defined complex problems. The experts ( $n=7$ ) were recruited from two large public Research I institutions. Using a think aloud methodology, the experts solved both routine and non-routine problem. Unprompted, the experts revealed a strong belief that the ill-defined problems are developmentally appropriate for graduate students while routine problems are more appropriate for undergraduate students. We discuss these results in terms of their implications for improving undergraduate engineering education.

**The Second Time Around: An Observation on Retest Effects for Oral Examinations**

Mark R. Raymond (National Board of Medical Examiners), Ula-na A. Luciw-Dubas (National Board of Medical Examiners)

This paper evaluates the performance of over 50,000 examinees from six medical specialty boards over several years. The pass rate for examinees who repeated an oral exam averaged about 66%, reaching as high as 77%. Meanwhile, the repeater pass rate for written exams for the same six boards averaged 41%. It is shown that measurement error and regression effects account for about one-third of the increase in oral exam scores on the second attempt. Prior research and logical analysis suggest that practice effects and other forms of construct-irrelevant variance also account for a notable portion of the score increase, leaving true improvement in examinee proficiency to explain a small portion of the increase.

**Validity and Reliability of the Maastricht Clinical Teaching Questionnaire: Factors Influencing Effective Clinical Teaching**

Renee Stalmeijer, Diana Dolmans, Ineke H.A.P. Wolfhagen, Arno Muijtjens, Jeroen JG Van Merriënboer, Albert Scherpbier (Maastricht University)

This study describes the construct validity and reliability of the M. Clinical Teaching Questionnaire (MCTQ). The MCTQ is based on the Cognitive Apprenticeship Model, and provides feedback to clinical teachers on their teaching skills. Additionally, we investigated how the different factors underlying the MCTQ affect each other and the overall performance of teachers. Data collection generated four or more ratings for 126 different teachers. Confirmatory factor analyses (aggregated on the teacher level) yielded a five factor model which fitted the data well. Generalizability studies indicated that six student

ratings are needed for a reliable overall rating of a single clinical teacher. The assumed structural linear model underlined the central role of modelling and coaching in clinical teaching.

*Chair:* Hugh A. Stoddard (University of Nebraska College of Medicine)

*Discussant:* Andre F. De Champlain (National Board of Medical Examiners)

**10:35 - 12:05pm**

**Motivating Professionals in and to Practice**

(Roundtable Session)

Colorado Convention Center, Korbel Ballroom 2

**Session Participants:**

**The Effects of Motivation and Emotion on Achievement in an Introductory Clinical Reasoning Course**

Anthony R. Artino & Steven J. Durning (Uniformed Services University of the Health Sciences)

This longitudinal, correlational study examined the relations between medical students' motivational beliefs (task value and self-efficacy), achievement emotions (enjoyment, anxiety, and boredom), and academic achievement in an introductory clinical reasoning course. Second-year medical students (N = 136) completed two self-report, online surveys. Taken together, the results largely confirmed the hypothesized relations between students' beliefs, emotions, and achievement. In particular, structural equation modeling revealed that enjoyment, anxiety, and boredom had moderate effects on students' course and national board exam grades. Moreover, the overall structural model accounted for considerable variance in each of the achievement outcomes ( $R^2 = .20$  and  $.14$  for the course and national board exam grades, respectively). Implications for the theory, research, and practice of medical education are discussed.

**The Use of Guided Inquiry: Creating an Active Learning Context for Professional Training**

Elliot P. Douglas (University of Florida), Chu-Chuan Chiu (University of Florida)

Education within the professions often includes the use of models of real-world experience to prepare students for professional practice. These models include case-based training in the medical fields, moot courts within the legal profession, and design activities in engineering. Guided inquiry, based on a cognitive model of learning (Svinicki, 2004), provides a means to engage students in actively completing the case-based problems and processing the information. It replaces a traditional teacher-centered model with a new student-centered model. This study examines the effectiveness of guided inquiry through a comparison made between lecture and guided inquiry sections. Observation and interviews are conducted to further understand how learning occurs within a guided inquiry class. The results and implications have applicability to other fields.

**Creating a Virtual Community of Practice Among Graduate Social Work Students**

Jayne Swanke (Southern Illinois University), Laura Dreuth Zeman (Southern Illinois University), Judy Ellen Doktor (Purdue-Calumet)

This paper seeks to understand whether virtual class discussions improve student understanding of two central practice competencies:

core theoretical concepts and consumer self-determination. Eighteen students enrolled in a two-semester social work practice class demonstrated the use of discussion boards on a web-based course management environment as a tool to improve student learning. Deductive qualitative analysis of peer-feedback to reflective journals found that responses increased over time by almost one response a week, as did student reflections on consumer self-determination. Implications for practice include possibly expanding communities of practice for practitioners seeking peer consultation due to isolation or specialty.

**Meeting Star Researchers: The Long-Term Impact of Graduate Students Meeting Nobel Laureates**

Erin Mehalic Burr & Samuel Held (Oak Ridge Institute for Science and Education)

This poster describes the long-term impact of a program which facilitates interaction between graduate students and star researchers of their fields of study. A description of this workforce development program, the Lindau Meeting of the Nobel Laureates Graduate Student Awards Program, and the results of its evaluation will be presented. An on-line survey was used to assess life since the Lindau Meeting and awardees' reflections on the impact of the Lindau Meeting. Awardees reported that the meeting had a great impact on forming their early career. Results revealed that awardees were completing their PhD programs, remaining in Science, Technology, Engineering, and Mathematics fields, and communicating/collaborating with other students, senior researchers, and Nobel Laureates. The study's limitations and implications are considered.

*Chair:* Carol S. Kamin (University of Illinois - Chicago)

**12:25 - 1:55pm**

**Requirements for Qualitative Research Papers**

(Invited Workshop)

Colorado Convention Center, Room 710

**Session Participants:**

Ilene B. Harris (University of Illinois - Chicago)

Qualitative research is increasingly part of our repertoire of scholarship. The purpose of this workshop is to enhance our knowledge and skills in conducting, reporting and evaluating qualitative research through an active learning process. Specifically, we will apply accepted standards for rigor in qualitative research methodology and reporting to appraise selected reports of qualitative research, focused on education for the professions, appearing in current issues of high impact journals.

*Chair:* Stanley John Hamstra (University of Ottawa)



2:15 - 3:45pm

**Restoring Honesty, Trust, and Safety in Health Care: Design, Implementation, and Assessment of an Adverse-Event Full-Disclosure Curriculum**

(Symposium)

Colorado Convention Center, Room 710

**Session Participants:**

*Chair:* Ara Tekian (University of Illinois - Chicago)

*Discussant:* Stanley John Hamstra (University of Ottawa)

*Discussant:* Ara Tekian (University of Illinois - Chicago)

*Discussant:* Brian Dwinell (Colorado University)

**Commentary Paper**—David Mayer (University of Illinois College of Medicine)

**Commentary Paper**—Timothy B. McDonald (University of Illinois - Chicago)

**Session Summary**

The Institute of Medicine has made a strong call for change in the education and training of physicians in order to address the problems associated with quality, access, and outcomes in the present health care system. Changing medical education however, presents a major challenge to educators since some of the gaps that need to be addressed conflict with deeply entrenched traditions and institutional cultures that compose the present medical education system. The discussants broaden the concept of full disclosure, honesty and trust, and apply it to professions other than medicine, such as law, aviation and engineering. Also, integration of these concepts into respective curricula will be discussed.

In a landmark report, *To Err is Human; Building a Safer Health System*, The Institute of Medicine estimated that as many as 98,000 patients die each year from preventable medical errors. The IOM made a strong call for change in the education and training of physicians in order to address the problems associated with quality, access, and outcomes in the present health care system. Changing medical education however, presents a major challenge to educators since some of the gaps that need to be addressed conflict with deeply entrenched traditions and institutional cultures that compose the present medical education system. To ensure patient safety, the next generation of physicians must be prepared to recognize potential sources of error in medical practice, to acknowledge their own vulnerability to error, and to engage fully in the process of continuous quality improvement. Most physicians agree that medical errors should be disclosed to patients; however, research demonstrates that disclosure of errors is uncommon, with roughly only 1 in 4 errors being disclosed. Many physicians remain silent secondary to the fear of litigation, fear of stating explicitly to a patient that an error occurred, and the desire to put a positive spin on a situation.

Full disclosure can be described as “communication between a health care provider and a patient, family members, or the patient’s proxy that acknowledges the occurrence of an error, discusses what happened, and describes the link between the error and outcomes in a manner that is meaningful to the patient”. Open and honest reporting of patient safety events is part of a patient centered informed consent process and allows caregivers to learn from and address problems within the care delivery system. This can prompt improvement in those practices and reduce harm to subsequent patients.

The first step in a culture of open and honest disclosure is to educate caregivers. It is difficult to create appropriate undergraduate learning opportunities when physicians, who serve as preceptors, have little or no experience with disclosure of medical error, believe they provide optimal quality care, and believe that they do not make mistakes.

Session panelists will present their nationally recognized patient-centered educational research in the areas of adverse event reporting, investigation, team-based communication, disclosure, and patient care process improvements that have changed organizational culture. Participants attending the session will be able to (1) gain an understanding on why open and honest disclosure around patient safety events is an important part of reducing risk and optimizing patient outcomes; (2) incorporate adverse event educational reporting systems within their institutions that align with the six medical education core competencies; and (3) use educational tools presented during the session within their organizations to introduce open and honest communication when harm occurs from care.

The discussants will broaden the concept of full disclosure, honesty and trust, and apply it to professions other than medicine, such as law, aviation and engineering. Also, integration of these concepts into respective curricula will be discussed.

8:30 - 10:30pm

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(RSVP to attend by April 22, see page 3 this issue)

**Monday May, 3**

**8:15 - 9:45am**

## **Means and Effects of Scholarly Teaching**

(Paper Session)

Colorado Convention Center, Room 710

### **Session Participants:**

#### **UTeach Engineering: Preparing Secondary School Teachers to Deliver Design-Based Engineering Courses**

Christina M. Cestone, Sarah Jane Harris, William McKenna, Taylor Martin Martin (University of Texas - Austin)

This paper reports the research results from the first year of a five-year teacher professional development initiative, UTeach Engineering, involving teachers in three central Texas school districts. Researchers compared in-service high school teachers' approaches to teaching engineering and science using inquiry methods. A mixed-method design is used to measure changes in teaching practices. Initial baseline observations of teachers' classroom teaching and student measures, pre and post-test measures of teachers' approaches to teaching, and domain knowledge assessments in engineering are collected to determine subsequent changes in teaching practices. Initial results show observed differences in teacher approaches to teaching engineering versus science and mathematics courses and significant differences in domain knowledge. Scholarly significance and future research plans are discussed.

#### **Exploring the Effects of Teachers and School Experiences on Adolescents' Choice of Engineering Careers**

Doug D. Hamman, Fanni Liu Coward, Amani Zaier (Texas Tech University)

Recent U.S. reports decry the status of STEM education, and key strategies for reversing it are changes to schools and teaching. Little information exists about effectiveness. Social Cognitive Career Theory may offer direction. In this mixed-methods study, freshmen engineering majors and Grade 9 Algebra students were surveyed about variables predictive of engineering career selection, and asked what might be done to increase interests. Results revealed that high schoolers, but not engineering major's efficacy and interest was related to the presence of teacher-informants. School opportunities were minimal and not predictive. Both groups recommended providing accurate information about engineering. Findings suggest that K-12 strategies may not be effective upon entry into post-secondary studies. Discussion focuses on better developing guides to reform efforts.

#### **Interrogation of Outcomes of the Carnegie Project on the Education Doctorate**

Syraj Syed (University of Florida), Jill A. Perry (Carnegie Project on the Education Doctorate), David G. Imig (University of Maryland)

As contemporary issues such as standards-based accountability, economic instability, stakeholder diversity, and broadening institutional mission contexts evolve, they dictate the competencies that educational leaders must possess to adapt to changing practice. The purpose of this paper is to report on thematic consistencies identified among institutions participating in the Carnegie Project on the Education Doctorate with regard to the program structure of the professional practice doctorate and expectations for practitioner competencies.

#### **The Development and Implementation of a "Resident as Teacher Program" for a Large, Tertiary-Care, Academic Health-Care Institution: Use of a Faculty-Driven "Train-the-Trainer" Program**

Lily C. Pien (Cleveland Clinic), Christine Ann Taylor (Cleveland Clinic Lerner College of Medicine)

Residents need to acquire skills as educators, a key role they hold during their residency. Our goal was to create a centralized development and training program, with distributed implementation and assessment and program evaluation at the Cleveland Clinic. Objectives were to design "generic" modules that all residency programs could utilize and adapt for their specialties and to identify and train specialty-specific faculty to teach residents. We utilized a three-phase model with a faculty Train the Trainer Program and designed seven core modules. Our program was successful as the majority of faculty (97%) felt confident to implement resident sessions and 97% of residents surveyed in resident sessions believed that could apply teaching skills learned in their practices

*Chair:* Casey B. White (University of Michigan Medical School)

*Discussant:* Luann Wilkerson (University of California - Los Angeles)

**10:35am - 12:05pm**

### **Scholarship, the Final Frontier: Meaning, Measuring, and Maximizing**

(Invited Address)

Colorado Convention Center, Room 710

### **Session Participants:**

Trudie Roberts (University of Leeds Medical School)

*Chair:* Ara Tekian (University of Illinois - Chicago)



**Professor Trudie Roberts, BSc (Hons) MBChB PhD FRCP**

Dr. Roberts is a Professor of Medical Education and Director of the Medical Education Unit at Leeds Institute of Medical Education, in Leeds, UK. Dr. Roberts' main interests and expertise are in the areas of assessment of competence, professionalism, inter-professional education and widening access and participation. She has published papers on inter-professional education, disabilities and assessment. She is an executive member of the Association for the Study of Medical Education (ASME) in the UK and chair of the ASME Education Research Group.

12:25 - 1:55pm

## Clinical Skills and Their Assessment

(Paper Session)

Colorado Convention Center, Room 710

### Session Participants:

#### Examining the Educational Value of First-Year Medical Students' Patient-Encounter Data

Bridget Colleen Obrien (University of California - San Francisco), Viet Cai (Boston University School of Medicine), Amin Az-zam (University of San Francisco, School of Medicine)

Many medical schools use patient encounter logs to document students' clinical experiences. This study examines the educational value and use of a web-based log system among medical students. We used a mixed methods approach that included: 1) a focus group, 2) a review of student entries in the patient log system and 3) a survey of high, low, and non-users. We analyzed the survey responses through qualitative content analysis. Twenty-one students out of 50 completed the survey (42%). Only four students felt EncounterIt facilitated their learning. Students identified many inhibiting factors suggesting the system was not a learning resource. However, the majority of students (62%) identified ways in which tracking patient encounters could benefit their learning if appropriately designed.

#### Association Between Physician Cognitive Skills and Performance in Clinical Practice

Brian J. Hess (American Board of Internal Medicine), Rebecca S. Lipner (American Board of Internal Medicine), Weifeng Weng (American Board of Internal Medicine)

Physicians' sound cognitive skills are important in delivering high-quality patient care. Research examining this relationship in the context of a specific medical domain using psychometrically sound instruments is sparse. Using 676 physician practices, we examined the relationship between cognitive skills, measured by scores on a secure recertification examination, and the quality of care provided to diabetic patients measured by a composite score aggregated from evidence-based clinical measures. This relationship was evaluated adjusting for physician and patient characteristics. Our study demonstrated that cognitive skill in a specific domain is associated with the quality of patient care in that domain, and that neither measure alone is sufficient to obtain a comprehensive assessment of a physician's clinical competence.

#### The Effects of Clerkship Order on Standard Clerkship Performance Ratings and End-of-Year Objective Structured Clinical Examination

Carol Doyle (Lewis & Clark College Portland), Luann Wilkerson, Sebastian Uijtdehaage Paul F. Wimmers (University of California - Los Angeles)

BACKGROUND: The logistical necessity of students taking required clerkships in non-uniform sequences may have significant consequences on performance. This study investigated the impact of previous clerkship experience on end-of-clerkship assessments and the effect of clerkship order on end-of-year OSCE performance. METHOD: Clinical performance scores were analyzed for 104 year-3 students. Students can choose between two unique clerkship tracks. RESULTS: Perfor-

mance improved significantly in the second half of the clinical year, regardless of track suggesting an accumulated advantage of previous experiences. OSCE scores, however, showed no significant differences between tracks after being adjusted by USMLE Step-1 scores. CONCLUSIONS: Modifications related to the sequence of clerkships should not focus on simply adjusting grades and clinical ratings to control for any time-of-year effect.

#### Modeling Growth of Knowledge in the Clinical Sciences Using Progress Tests: Results of a Pilot Project Between the National Board of Medical Examiners and a U.S. Medical School

Andre F. De Champlain (National Board of Medical Examiners), Monica M. Cuddy (National Board of Medical Examiners), Peter V Scoles (National Board of Medical Examiners), Marie Brown (National Board of Medical Examiners)

The aim of this study was to explore the use of progress testing in clinical education by modeling growth of knowledge, as well as by assessing the impact of recent training on performance. Performances across four administrations for a group of 130 US medical students were included in our study. For each discipline, a separate series of measures-nested-in-students HLM growth curve analyses was run. Also, repeated measures ANOVAs were run to assess the effect of recent training on performance. Clerkship rotation order was related to growth rates for total and Pediatrics scores only. Additionally, scores were higher in a given discipline if training had occurred immediately prior to the test administration. Results are further discussed in light of past research.

*Chair:* Louis J. Grosso (American Board of Internal Medicine)

*Discussant:* Katharine Boursicot (St George's, University of London)

2:15 - 3:45pm

## Noncognitive Aspects of Professional Practice

(Paper Session)

Colorado Convention Center, Room 703

### Session Participants:

#### Modeling Moral Agency in Higher Education Through Codes of Ethics

Patrick D. Pauken (Bowling Green State University), Terry L. Herman (Bowling Green State University), Frank Latendresse (Bowling Green State University)

If it is true that we become ethical by doing ethical things, then educating for ethics in education requires more than policies with flowery purpose statements and vague, unenforceable language. Simultaneously, ethics education requires more than discipline-based codes inspired, not by citizens who do ethical things, but by those who merely refrain from doing unethical things. The purpose of this study was to analyze codes of ethics in public higher education for purpose, scope, language, and enforcement provisions. We argue that both professional codes and personal codes are necessary for modeling moral agency, with professional codes important for daily decision-making and moral agency of whole professions, and personal codes as, perhaps, the best leadership avenue for modeling individual moral agency.

### Noncognitive Variables as Predictors of Success of Graduate International Students in Science and Engineering

Rania Sanford (Stanford University), Thomas R. Harvey (University of Laverne)

Admission to graduate programs in STEM relies on indicators such as the grade point average (GPA) and Graduate Record Examination score (GRE) as predictors of success. However, their use is problematic for high-achieving students, where non-cognitive predictors have provided alternate ways to differentiate student abilities and potential. This paper discusses findings of a study of international graduate students in two highly selective graduate programs at two universities. Self-concept, self-appraisal, handling the system, preference for long term goals, presence of a support person, leadership abilities, community service and knowledge in the field were studied in relation to student GPA, publication and time-to-degree completion. The paper discusses the significance of the relationships and the differences found by degree level and by gender.

### Relationships Among Perceived Autonomy Support, Coping, Tenure and Nurses' Affective Commitment to Their Current Jobs

Cynthia A. King (Professional Research Consultants)

Hospitals are experiencing a shortage of nurses. While traditional research explored reasons why nurses leave their jobs, this study examined why nurses stay. Inter-relationships among cognitive, affective, and job tenure variables and their impact on nurses' affective commitment to their jobs were assessed. Participants were 134 full-time nurses. Analyses revealed that, for nurses working less than six years, there were positive relationships between percentage of reported coping approach strategies and nurses' affective commitment to their current jobs depending on their level of perceived autonomy support. However for nurses working more than six years, there was a negative relationship between percentage of reported coping approach strategies and nurses' affective commitment for nurses with low levels of perceived autonomy support.

### Performance of Examinees on the USMLE® Step 2 CS Communication and Interpersonal Skills Subscales

Kimberly A. Swygert (National Board of Medical Examiners)

The United States Medical Licensing Examination (USMLE®) assesses physicians' communication skills via the USMLE Step 2 Clinical Skills® examination and provides feedback to examinees about their performance on the Communication and Interpersonal Skills (CIS) scale. In 2008, examinees began receiving performance feedback on three CIS subscales. This study summarizes the subscale performance and reliability of 14,593 examinees testing in 2008. Descriptive statistics and reliability estimates were computed. Overall, US medical graduates (USMGs) outperformed international medical graduates (IMGs) on the subscales, and, within each group, females outperformed males. Examinees failing CIS had a different pattern, and female USMGs performed the worst on one of the three subscales. In conclusion, the CIS subscale profiles provide reliable and potentially useful feedback.

*Chair:* Michael G. Jodoin (National Board of Medical Examiners)

*Discussant:* Wim H. Gijsselaers (Maastricht University)

### Simulation Innovations Across the Professions (Paper Session)

Colorado Convention Center, Room 710

#### Session Participants:

#### Critical Thinking in Nursing Simulations: Comparisons Across Roles

Peggy A. Ertmer, Johannes Strobel, Xiaojun (June) Chen, Xi (Carol) Cheng, Hannah Kim, Larissa A Olesova, Ayesha Sadaf, Annette J Tomory (Purdue University)

The development of critical thinking is crucial in nursing education to augment the capabilities of pre-service nurses. One method to enhancing this quality is the participation in role-playing simulation-based scenarios where the nursing students work together to resolve a potentially real situation. In our study, undergraduate nursing students were divided into groups of three (one group of two) to role-play a medical emergency (stroke) of a patient within a high fidelity simulation environment. The research team utilized a cross-case comparison design; cases were defined as different roles nursing students played: primary nurse, secondary nurse, and family member. Results indicate that students displayed high levels of contextual perspectives, reflection on-action, and varying levels of confidence during the simulation and the debriefing activities.

#### High-Fidelity Simulations in Nursing Education: A Theoretical Review of the Literature

Liam Rourke (University of Calgary), Cynthia Mannion (University of Calgary)

In this article, we provide a review of the literature on high-fidelity simulation (HFS) as it is used in nursing education. The organizing constructs for our review are theories of learning, instruction, and technology. We identified articles for review by searching the Cumulative Index of Nursing and Applied Health Literature (CINAHL) for empirical reports using the key terms high-fidelity simulation and nurs\* from the years 2000 to 2009. Of the articles that matched our inclusion criteria: 45% made no use of theory; 39% made minimal use; and 13% made adequate use. Theory-based research could bring coherence and external validity to this domain we argue.

#### Evaluating the Effectiveness of Three-Dimensional Animations for Teaching Equine Gait Patterns

Robert Paul Malinowski (Michigan State University)

This study was designed to evaluate the effectiveness of 3D animations for teaching equine gait patterns to undergraduate students in the field of pre-veterinary medicine. A quasi-experimental, nonequivalent control group design was used. The data was analyzed using one-way analysis of covariance (ANCOVA), with the pretest score as the covariate. While the 3D treatment group had an overall higher adjusted mean post-test score, this difference was not statistically significant. Written and verbal feedback indicated the treatment group found the three-dimensional materials to be highly engaging and enjoyable. Further analysis of the data is currently being conducted to determine if there was a significant difference between the groups based on question type (gait identification, gait description, gait interpretation).

## **The Transparency Paradox: Computational Simulations as Learning Tools for Engineering Graduate Education**

Alejandra de Jesus Magana de Leon, Sean P. Brophy, George Bodner (Purdue University)

Computational simulations have become a critical part of computational science, which is being described as the third leg in this century's methodologies of science. Computational simulations have also become a critical element of learning experiences as they can provide engineering students with the ability to do things that they could not do in the real world. This study explores engineering graduate students' perceptions related to aspects associated to the transparency of the simulation tools. The results of this study show that most of the students interviewed found using computational simulations as useful for their learning. However, a transparency paradox was identified. A proposed solution to the transparency paradox may be the implementation of scaffolds together with three different levels of transparency.

*Chair:* Ara Tekian (University of Illinois - Chicago)

*Discussant:* Sara Kim (University of Washington)

**Tuesday May, 4**

**8:15 - 10:15am**

## **Professional Development: Local Through Global Perspectives (Paper Session)**

Colorado Convention Center, Room 710

### **Session Participants:**

#### **Performance of Physicians Trained Through the Research Pathway in Internal Medicine**

Rebecca S. Lipner (American Board of Internal Medicine), Carola M Jacobs (American Board of Internal Medicine), Eric S Holmboe (American Board of Internal Medicine)

The vital role that physicians play in clinical research has been recognized by the internal medicine community through an integrated residency training pathway that shortens the clinical training time for those pursuing careers in clinical research. More recently, a competency-based education and evaluation model has been proposed to make training more flexible for residents pursuing career paths other than clinical research. Educators are concerned that one less year of clinically-based training could negatively affect a physician's clinical judgment when providing patient care. Using performance data from the internal medicine certification examination we demonstrated that being trained through a research pathway does not negatively impact overall competence in clinical judgment as measured by certification status.

#### **Professional Education Through a Lifetime: A Study of the Learning of Engineers**

Kevin J Anderson (University of Wisconsin - Madison), Sandra Courter (University of Wisconsin)

In this study surveys, interviews, and observations of practicing engineers reveals a lifetime spent learning a distinct way of thinking and

working. The study sought to answer the question of where engineers learned how to think like and be an engineer. Findings suggest that informal educational experiences often provided individuals with the motivation to pursue engineering and helped develop necessary skills to succeed at it. Formal education is typically seen as less valuable to the real work of an engineer. In order to increase and strengthen the engineering workforce, these findings suggest that improving connections to engineering work and knowledge from a young age, particularly in formal settings, will help.

#### **Beyond Description: An Exploration of Experienced Archivists' Knowledge and Searching Skills**

Denise Anthony (University of Denver)

The knowledge of experienced reference archivists is indispensable for finding information in archival collections and to the continuing effective operation of an archival organization. However, an understanding of this knowledge is limited due to the lack of empirical studies. This paper discusses my qualitative research study designed to fill this gap by exploring the skills and knowledge of eight highly experienced reference archivists compared with those of novices, using a situated activity theory perspective. The findings of my study suggest ample content for education and training programs that currently do not exist, yet are critical to the maintenance of institutional memory.

#### **Globalization of Professional Education: A Case Study of the Planning Process of an International Multi-Institutional Degree**

Mary Allison Witt (University of Illinois)

Research consistently shows that education for the professions previously lagged behind other disciplines in higher education in some measures of internationalization, specifically study abroad. The resulting efforts within education for the professions has extended the frontier in international education for all of higher education, developing new forms of programs abroad. The objective of this research is to examine an innovation in program planning and development within education in the professions, an international multi-institutional graduate degree program in engineering education. This study examines the possibilities and limitations that program planners encounter. This qualitative case study explores the new frontier in professional education, uncovering the rationales, possibilities, and barriers that emerge in the planning process of an international multi-institutional degree.

#### **Dental Student Professional Identity Formation: Themes Illustrative of Developmental Stage Differences**

Verna E. Monson (University of St. Thomas), Muriel J. Bebeau (University of Minnesota)

Kegan's (1982) theory of identity formation was used to examine these artifacts in first-year student course portfolios: admissions essays, professional identity essays, and reflective self assessments following instruction. Differences in the way meaning was constructed within four themes illustrated developmental stages as did diversity of life experiences, and the ability to engage in self assessment and reflection. Themes included (1) dentistry as lifestyle vs. privilege, (2) dentist as aesthetician vs. healer, (3) independent services provider vs. change agent, and (4) expectations of the nature of the dentist's work. In two cases, the admissions essay suggested more advanced development than did the other artifacts. Replication in other professions such as law or medicine is a future research direction.

#### **Effects of Individual Determinants on Feedback-Seeking**

## Behavior and Professional Development

Janine van der Rijt (Maastricht University), Wim H. Gijsselaers (Maastricht University), Piet Van den Bossche (Maastricht University), Mien Segers (University Maastricht, Fdewb), Margaretha W. J. Van De Wiel (Maastricht University)

This study examined the role of individual differences in goal orientation and grit (perseverance and passion for long-term goals) in feedback-seeking behavior in everyday work lives and professional development. This study was conducted in the expert field of Finance and Control. The results show that the professionals' goal orientation influences feedback-seeking behavior, and grit relates positively to the feedback quality of the supervisor and colleagues. Thus, the study provides evidence for the importance of taking into account individual factors to understand feedback-seeking behavior in everyday work lives. Furthermore, the results provide support for the relation of feedback-seeking behavior with professional development. In particular, quality of the feedback of supervisors seems important for professional development.

*Chair:* Sara Kim (University of Washington)

*Discussant:* Dorthea H. Juul (American Board of Psychiatry and Neurology, Inc.)

**10:35am to 12:05pm**

## Investigating Professional Instruction: Explorations, Misconceptions, and Perceptions

Colorado Convention Center, Room 710

### Session Participants:

#### Playful Exploration to Improve Design

Doris C. Zahner (Stevens Institute of Technology), Jeffrey V Nickerson (Stevens Institute of Technology), Barbara Tversky (Stanford University; Columbia University), James E. Corter (Teachers College)

One elusive goal of education is to enable students and practitioners to be more creative. Here, we investigate prior free play with design tools as a technique to augment design of information systems. Designers think in a medium, mainly diagrammatic, lines and nodes. Design students who explored the complete diagrammatic medium created more abstract objects than those given the partial medium. Those whose creations were more abstract later invented better designs. Free play with the medium may augment design by allowing designers to create a broad unconstrained range of alternatives that may later serve as solutions to constrained problems.

#### Can Instruction Reinforce Misconceptions? Preliminary Evidence From a Study With Advanced Engineering Students

Dazhi Yang (Purdue University), Ruth A. Streveler (Purdue University), Ronald L. Miller (Colorado School of Mines)

Why are some misconceptions so hard to correct? This study investigates that question using Chi's proposal that providing students appropriate mental framework can help them repair misconceptions. We also test our hypothesis that instruction, i.e., coursework, can reinforce students' misconceptions. We conducted an experimental study

with 60 undergraduate engineering students who had taken at least two courses in heat transfer, thermodynamics, or fluid mechanics. The results show that: 1) providing the appropriate mental framework works in some cases but not all cases; 2) the more coursework the students had the worse they performed. Implications of this study call for the need for effective instruction and further research on how to provide effective instruction and improved textbooks in engineering.

#### Confronting Misconceptions in Introductory Physics on the Path to Engineering Careers

Reagan Curtis (West Virginia University), Braxton Lewis (West Virginia University), Gary Winn (West Virginia University)

Introductory Physics is a course where many students struggle, often leading to the unfortunate outcome that they leave engineering degree/career paths. We instituted innovative techniques to support a subset of students, and utilized Force Concept Inventory (FCI) scores to determine whether those who received our intervention outperformed those receiving more traditional approaches. Our intervention included meeting in small groups twice a week at the Engineering College to draw on students' collective pre-engineering experience while confronting physics misconceptions. Intervention students showed significantly greater improvement in FCI scores compared to nonintervention students,  $F(1,43) = 4.22$ ,  $p < .05$ , partial  $\eta^2 = .09$ . End of semester FCI predicted 35% of variability in final grades.

#### Student Attrition in PBL: Tutor and Student Perceptions on Student Progress

Rinske Franssen (Maastricht University), Wim H. Gijsselaers (Maastricht University), Jan Nijhuis (senior researcher)

High attrition rates in professional education can be considered as a sign of waste and inefficiency. The present study was conducted at a PBL European business school. SACQ was filled out by both tutors and students. The results show that tutors predicted academic adjustment and expected passing rate has the highest correlation with actual student progress. Next to that, the perceived academic adjustment by both tutor and student predict student progress best, ( $R^2_{adj} = .15$ ). Training tutors in recognizing academic adjustment and encouraging student to seek feedback to improve their self image are next steps in this research.

*Chair:* Glen P. Rogers (Alverno College)

*Discussant:* Margaret E. Malloch (Victoria University Australia)



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"Denverites joke that the airport is so far away it might as well be in another state. In truth, the trip to the airport is 24 miles from the city center."

## SIG PROFESSIONAL LICENSURE AND CERTIFICATION SESSIONS

**Saturday, 4:05 pm**

### Division and SIG Roundtables

4:05 pm to 5:35 pm

#### Assessing Examinees, Assessing Examinations. Roundtable Session 19

SIG-Professional Licensure and Certification Roundtable

Colorado Convention Center,  
Street Level, Room 109, 111, 113

Chair: *Kimberly A. Swygert, National Board of Medical Examiners*

Participants:

**Assessing Nonpracticing Physicians' Quality Improvement Knowledge and Practice.** *Timothy A. Sares, Researcher; Hao Song, American Board of Internal Medicine; Michael J. Bolen, American Board of Internal Medicine; Rebecca S. Lipner, American Board of Internal Medicine*

**Assessing the State of Computer-Based Simulations for Licensure and Certification Programs.** *Hao Song, American Board of Internal Medicine; Michael J. Bolen, American Board of Internal Medicine; Rebecca S. Lipner, American Board of Internal Medicine*

**Certification of Graduates of International Medical Schools: A Global Comparison.** *Marta van Zanten, Foundation for Advancement of International Medical Education and Research*

**Shortening a Professional Certifying Examination.** *Linda A. Althouse, American Board of Pediatrics; Ying Du, American Board of Pediatrics*



**Sunday, 12:25 pm**

### SIG Sessions

12:25 pm to 1:55 pm

#### Item Management: From Development Through Statistical Evaluation, Delivery, Cognitive Level, and Memorability.

SIG-Professional Licensure and Certification; Paper Session

Colorado Convention Center,  
Street Level, Room 608

Chair:

*Jason Rinaldo, American Board of Family Medicine*

Discussant:

*Brian Hess, American Board of Internal Medicine*

Participants:

**Developing Item Variants: An Empirical Study.** *Ada Woo, National Council of State Boards of Nursing; Anne L. Wendt, National Council of State Boards of Nursing; Shu-Chuan Kao, Pearson VUE; Jerry L. Gorham, Pearson VUE, Inc.*

**Using the Right Statistics: An Analysis of Item Selection Statistics for Criterion-Referenced Tests.** *Andrew Jones, American Board of Surgery*

**Score Comparability of Paper-and-Pencil and Computer Versions of a Licensing Examination.** *Tsung-Hsun Tsai, American Dental Association; Chingwei D. Shin, Pearson; Jason L. Meyers, Pearson; Hong Wang, University of Pittsburgh*

**Innovative Items Memorability and Cognitive Processing: A Pilot Study.** *Anne L. Wendt, National Council of State Boards of Nursing; J. Christine Harmes, James Madison University; Ada Woo, National Council of State Boards of Nursing*

**Sunday, 6:15 pm**

### SIG Sessions

6:15 pm to 7:45 pm

#### Professional Licensure and Certification SIG Business and New Membership Meeting.

SIG-Professional Licensure and Certification; Business Meeting

Colorado Convention Center, Street Level, Room 107

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